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Meaning making helps cope with COVID-19: A longitudinal study

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ABSTRACT

Meaning making is a useful coping strategy in negative situations. We investigated whether making meaning in negative experiences (MINE) would help people cope with COVID-19. We conducted a three-wave longitudinal study ($N = 2364$) three months before, during, and after the COVID-19 outbreak in China. Results showed that participants reported increased tendency of MINE during the COVID-19 outbreak than three months before the outbreak. Moreover, both initial MINE and the increased MINE predicted less psychological distress including depression, anxiety and stress, during and three months after the outbreak. Perceived benefits and costs of the COVID-19 mediated the long-term effect of MINE. These findings not only provide novel evidence for meaning making model but also shed light on the underlying mechanism, suggesting an effective strategy to cope with stressful events such as the ongoing COVID-19 pandemic.

“Good fortune follows upon disaster; disaster lurks within good fortune.”

《Tao Te Ching》

1. Introduction

The outbreak of the novel coronavirus (COVID-19) has posed a huge threat to people all over the world. The present research examined how people make meaning in response to such threatening situations and thereby achieve better psychological adjustment. In the following section, we reviewed existing research on the psychological impacts of COVID-19, and then elaborated meaning making as a coping strategy, before presenting empirical study.

1.1. COVID-19 pandemic as a threatening situation

As one of the most serious pandemics in the past century, the COVID-19 has produced various psychological, economic and political influences. Over the past months, a surge in research into the psychological impacts of COVID-19 has been witnessed (Boyraz & Legros, 2020; Van Bavel et al., 2020). Among various domains, the influences of the

COVID-19 pandemic on psychological health have received the most attention. Early research from China, where the pandemic struck first, revealed that the COVID-19 pandemic can lead to higher levels of psychological distress such as panic, stress, anxiety, depression, psychotism, obsessive compulsion, posttraumatic stress symptoms, and sleep problems (Cao et al., 2020; Liu et al., 2020; Qiu et al., 2020; Tian et al., 2020; C. Wang et al., 2020; Zhang, Zhang, Ma, & Di, 2020). Recent research from other countries also found that the COVID-19 pandemic can cause higher risk of mental distress, posttraumatic stress disorder, and even suicide attempts (Boyraz & Legros, 2020; Gunnell et al., 2020; Jungmann & Witthöft, 2020; Mustafa, 2020; Sibley et al., 2020).

The emerging research has demonstrated extensive detrimental influences of the COVID-19 outbreak on human mental health. However, research about how to cope with COVID-19 was still rare. Besides, most of the existing research was based on cross-sectional data and longitudinal investigation was rare, which made us know little about the prospective impacts of COVID-19 (Chen & Bonanno, 2020; Shacham et al., 2020). In this research, we conducted a longitudinal investigation to examine whether meaning making could help people achieve better psychological adjustment in response to the COVID-19 outbreak.

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1.2. Meaning making as a coping strategy

Meaning making refers to how individuals construe, understand, and make sense of life events (C.L. Park & Folkman, 1997). The meaning making theories assume that people hold global meaning, which provides people with a motivation and a framework to interpret their life experience. When the current situation challenges or threatens the global meaning, individuals tend to appraise the situation and assign meanings to it. The process of meaning making, aligning the situational meaning with the global meaning, when successful, leads to better adjustment (C.L. Park, 2010).

Meaning making is crucial in negative situations (C.L. Park & Folkman, 1997). According to the meaning making model, when encountering stressful situations, people are likely to cope with the stressful situation by reappraising the situations and seeking a more positive understanding of the situation and its implications (C.L. Park, 2010; C.L. Park & Ai, 2006). Although inconsistencies exist (e.g., Bonanno, Papa, Lalande, Zhang, & Noll, 2005), accumulated findings indicated that meaning making is beneficial for psychological adjustment (C.L. Park, 2016). For example, meaning making predicted better contemporaneous and subsequent psychological well-being among patients with cancer (Boehmer, Luszczynska, & Schwarzer, 2007; Ching, Martinson, & Wong, 2012; C.L. Park, Edmondson, Fenster, & Blank, 2008), people suffering from depression (Hayes, Beevers, Feldman, Laurenceau, & Perlman, 2005), and people who are confronted with negative life events such as miscarriage (Nikčević & Nicolaides, 2014), bereavement (Holland, Currier, & Neimeyer, 2006), and September 11th terrorist attacks (Ai, Cascio, Santangelo, & Evans-Campbell, 2005).

A possible mechanism for the utility of meaning making in coping with negative situations is that the meaning making process enables people to reframe their negative experiences more positively, given that positive reframing of negative experiences is a core determinant of adaptive adjustment (Ching et al., 2012; Pakenham & Cox, 2009; Sears, Stanton, & Danoff-Burg, 2003). Indeed, meaning making has been found to be associated with better adjustment among cancer survivors through deriving positive meanings from their cancer experiences (C.L. Park et al., 2008). More relevantly, the latest research showed that during the outbreak of COVID-19, people who perceived less negative impacts of the pandemic reported lower levels of psychological distress (Jiang, Nan, Lv, & Yang, 2020; H. Wang et al., 2020).

The current research focused on a special kind of meaning making strategy — the tendency of seeing Meaning in Negative Experiences (MINE). MINE has been operationalized as “general positive beliefs about negative experiences and tendency to actively reflect on the meaning or value of negative experiences” (p7, Khei, 2019).

Recent research has linked MINE to positive reframing, such that people with higher MINE are more likely to adopt positive reframing, and momentarily heightened MINE would lead to heightened probability of positive reframing (Khei, 2019). How would MINE help people cope with COVID-19? This is the question we aimed to address in the current research.

1.3. Overview

We reported a three-wave longitudinal study to examine whether and how MINE would help people cope with COVID-19. A large sample of Chinese college students was assessed at three time points: The first wave was administered before the outbreak of COVID-19 (T1; October 2019), which was a part of a freshmen screening test; The second wave was administered during the COVID-19 outbreak (T2; February 2020); The third wave was conducted when the pandemic had almost subsided (T3; May 2020).

Based on the existing conceptualization and research about meaning making and MINE as reviewed above, we predicted that 1) the outbreak of COVID-19 could elevated the level of MINE; 2) MINE could help people cope with the pandemic; 3) positive reframing of the pandemic

would account for the benefits of meaning making. Accordingly, we proposed six specific hypotheses: 1) Participants' tendency of MINE would increase from T1 to T2 and decrease from T2 to T3 (*Hypothesis 1*); 2) People with higher initial MINE at T1 would manifest less psychological distress (i.e., depression, anxiety and stress) at T2 (*Hypothesis 2*) and T3 (*Hypothesis 3*); 3) The enhanced MINE from T1 to T2 would promote psychological adjustment (i.e., reduce depression, anxiety and stress) at T2 (*Hypothesis 4*) and at T3 (*Hypothesis 5*); 4) positive reframing of the pandemic (i.e., perception of more benefits and less costs) would mediate the benefits of MINE (*Hypothesis 6*). We tested these hypotheses in the current longitudinal study.

2. Method

2.1. Participants

All participants were college students from Zhejiang Ocean University in China. As a part of a psychological screening test among first-year university students, the first-wave of data was collected before the COVID-19 outbreak while all students were at university (T1; October 2019). During the outbreak of COVID-19, we administered a second-wave investigation among students who participated the first-wave while they were on winter break (T2; February 7 to February 17, 2020). Three months after the COVID-19 outbreak (T3; May 2020) — when the pandemic had almost subsided in China and students have returned to university, we administered the third-wave investigation. A total of 2364 participants (1076 men and 1288 women; $Mean_{age} = 20.04$ years, $SD = 0.98$) completed measures in all three waves. The data files and analysis syntax of the study can be found at <https://osf.io/9gq7b/>.

2.2. Measures

In all three waves, participants completed the Chinese version of the MINE scale (Khei, 2019) and the Depression Anxiety Stress Scale (DASS; Antony, Bieling, Cox, Enns, & Swinson, 1998), along with other measures unrelated to the present research. To examine the potential mediating role of perceived benefits and costs about COVID-19, in the third wave, participants also completed the Perceived Benefits and Costs Scale (PBCS) of COVID-19 (Cheng, Wong, & Tsang, 2006).

MINE.

The 9-item MINE scale measures participants' general lay beliefs in the meaning and value of negative experiences (e.g., “I think that experiencing negative events in life is meaningful”), as well as the tendency of actively reflecting on the meaning or value of the negative experiences (e.g., “I actively focus on the meaning of the negative events that I encounter”). Participants indicated their agreement with each of the statements along a 6-point scale (1 = *Strongly disagree*, 6 = *Strongly agree*).

Psychological distress.

The 21-item DASS was used to measure psychological distress. The scale comprised three subscales: Depression (e.g., “I felt that I had nothing to look forward to”), Anxiety (e.g., “I was aware of the action of my heart in the absence of physical exertion”) and Stress (e.g., “I was intolerant of anything that kept me from getting on with what I was doing”). Participants indicated their agreement with each item during the past week on a 4-point scale (1 = *Strongly disagree*, 4 = *Strongly agree*).

Perceived Benefits and Costs.

We adapted the PBCS from a previous study (Cheng et al., 2006). The scale is comprised of a 20-item Benefit subscale and a 15-item Cost subscale. Participants indicated their agreement on positive impacts (for the Benefit subscale, e.g., “Increased appreciation of life”, “Increased appreciation of relationships with significant others”) or negative impacts (for the Cost subscale, e.g., “Reduced self-confidence”, “Reduced social activities”) of COVID-19. The rating scale ranged from 1 (*Strongly*

disagree) to 7 (Strongly agree).

2.3. Data analysis strategy

Given that our study was longitudinal in nature and that we were concerned with not only absolute level of MINE (or between-person differences) but also its change (or within-person differences), we employed the latent change score model to test our hypotheses (McArdle, 2009). The latent change score model can directly model between-person differences in within-person change. Moreover, this model allowed us to examine hypotheses based on latent rather than observed scores, which could avoid diverse limitations associated with observed score. In the model, we defined $MINE_t = MINE_{t-1} + \Delta MINE_t$, where $\Delta MINE_t$ represented the MINE difference between time t and time $t-1$.

Before reporting results of the latent change score modeling, we did some preliminary analyses based on observed score.

3. Results

3.1. Preliminary analyses based on observed score

Table 1 presented means, standard deviations, internal consistency, and correlations of all measures over time. We could see that participants reported higher MINE during the outbreak of COVID-19. Paired t -test showed that MINE at T2 was higher than T1, $t(2363) = 9.79, p < .001, d = 0.20$, and T3, $t(2363) = 2.99, p = .003, d = 0.06$, while MINE at T3 was also higher than T1, $t(2363) = 7.41, p < .001, d = 0.16$. These findings provided preliminary evidence for Hypothesis 1.

We could also see that MINE at T1 was significantly correlated with depression, anxiety and stress at T2 and T3, suggesting that people with higher initial level of MINE could exhibit better psychological adjustment during and after the outbreak of COVID-19. These findings provided preliminary evidence for Hypothesis 2 and 3.

We could also see that MINE at T1 was significantly correlated with perceived benefits and costs at T3, suggesting people with higher initial MINE could see more benefits but less costs of COVID-19 at T3. Besides, perception of more positive and less negative impacts was associated with less depression, anxiety and stress at T3. These findings suggested the potential mediating role of perceived benefits and costs in accounting for the influences of MINE on psychological adjustment.

Unexpectedly, across all three time points, participants reported the lowest depression, anxiety and stress at T2, $F_s > 10.70, p_s < .001$. Specifically, depression at T2 was lower than T1, $t(2363) = -4.49, p < .001, d = 0.09$, while equivalent with T3, $t(2363) = 0.07, p = .44$; anxiety at T2 was lower than T1, $t(2363) = -15.71, p < .001, d = 0.23$, and T3, $t(2363) = -4.09, p < .001, d = 0.08$; stress at T2 was also lower than T1, $t(2363) = -17.12, p < .001, d = 0.35$, and T3, $t(2363) = -6.26, p < .001, d = 0.13$. This might be due to our specific college student sample. We will discuss these unexpected findings later.

3.2. Analyses based on latent change score model

We used the latent change score model to fit the MINE data from three time points. We also relied on this model to test our hypotheses.

3.2.1. The change of MINE

We first examined whether MINE increased from T1 to T2 and decreased from T2 to T3, as suggested by Hypothesis 1. To do this, we tested two nested models. We first tested a constant change model, which hypothesized that the MINE changed constantly over time. Thus, we set the means and variance of two differences scores to be equal. Also, the two difference factors were allowed to be correlated with the initial level of MINE. The model fit was not satisfactory, $\chi^2(3) = 142.13, p < .001, CFI = 0.909, TLI = 0.909, RMSEA = 0.140, SRMR = 0.154$. As such, we allowed the means of two difference scores to be free estimated in the new model. The model fit improved significantly, $\chi^2(1) = 10.49,$

Table 1
Means, Standard Deviations, Internal Consistency, and Correlations for Study Variables across Three Waves.

| | alpha | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|-------------------|-------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 1.MINE(T1) | 0.83 | | | | | | | | | | | | | |
| 2.MINE(T2) | 0.82 | 0.46*** | | | | | | | | | | | | |
| 3.MINE(T3) | 0.80 | 0.45*** | 0.53*** | | | | | | | | | | | |
| 4.Depression(T1) | 0.78 | -0.21*** | -0.15*** | -0.18*** | | | | | | | | | | |
| 5.Anxiety(T1) | 0.76 | -0.13*** | -0.07*** | -0.11*** | 0.70*** | | | | | | | | | |
| 6.Stress(T1) | 0.80 | -0.09** | -0.04* | -0.07** | 0.66*** | 0.74*** | | | | | | | | |
| 7.Depression(T2) | 0.84 | -0.14*** | -0.17*** | -0.18*** | 0.49*** | -0.40*** | 0.41*** | | | | | | | |
| 8.Anxiety(T2) | 0.81 | -0.08** | -0.13*** | -0.13*** | 0.37*** | 0.42*** | 0.39*** | 0.77*** | | | | | | |
| 9.Stress(T2) | 0.86 | -0.06* | -0.09*** | -0.11*** | 0.39*** | 0.41*** | 0.46*** | 0.80*** | 0.83*** | | | | | |
| 10.Depression(T3) | 0.88 | -0.13*** | -0.17*** | -0.24*** | 0.46*** | 0.39*** | 0.37*** | 0.51*** | 0.45*** | 0.45*** | | | | |
| 11.Anxiety(T3) | 0.85 | -0.07** | -0.14*** | -0.17*** | 0.37*** | 0.44*** | 0.39*** | 0.45*** | 0.49*** | 0.47*** | 0.82*** | | | |
| 12.Stress(T3) | 0.88 | -0.07** | -0.11*** | -0.13*** | 0.39*** | 0.43*** | 0.47*** | 0.46*** | 0.47*** | 0.51*** | 0.80*** | 0.85*** | | |
| 13.Benefit(T3) | 0.97 | 0.29*** | 0.37*** | 0.58*** | -0.19*** | -0.12*** | -0.11*** | -0.20*** | -0.14*** | -0.14*** | -0.27*** | -0.22*** | -0.21*** | |
| 14.Cost(T3) | 0.94 | -0.19*** | -0.22*** | -0.33*** | 0.30*** | 0.26*** | 0.28*** | 0.31*** | 0.30*** | 0.30*** | 0.41*** | 0.39*** | 0.39*** | -0.38*** |

* $p < .05$.

† $p < .10$.

** $p < .01$.

*** $p < .001$.

$p < .001$, CFI = 0.994, TLI = 0.981, RMSEA = 0.063, SRMR = 0.050, $\Delta\chi^2(2) = 131.64$, $p < .001$ (see Fig. 1 for model illustration and estimates). Consistent with *Hypothesis 1*, the MINE increased significantly from T1 to T2, $B = 0.16$, $\beta = 0.20$, $SE = 0.02$, $p < .001$, and decreased significantly from T2 to T3, $B = -0.04$, $\beta = -0.06$, $SE = 0.01$, $p = .003$. The results suggested the COVID-19 outbreak promoted MINE, providing additional evidence that negative situation was an important determinant of MINE.

3.2.2. MINE and distress at T2

The *Hypothesis 2* and *Hypothesis 4* suggested that both MINE at T1 and the increased MINE (i.e., the change) from T1 to T2 would be negatively associated with distress at T2. To test these, we regressed distress outcomes (depression, anxiety and stress) at T2 onto MINE at T1 and change score of MINE from T1 to T2, while controlling level of distress at T1. Consistent with our hypotheses, MINE at T1 was significantly predictive: MINE at T1 was negatively associated with depression ($B = -0.36$, $\beta = -0.10$, $SE = 0.08$, $p < .001$), anxiety ($B = -0.29$, $\beta = -0.08$, $SE = 0.08$, $p < .001$), and stress ($B = -0.29$, $\beta = -0.07$, $SE = 0.09$, $p = .001$) at T2; moreover, the increased MINE was also negatively related to depression ($B = -0.38$, $\beta = -0.11$, $SE = 0.07$, $p < .001$), anxiety ($B = -0.38$, $\beta = -0.12$, $SE = 0.07$, $p < .001$), and stress ($B = -0.36$, $\beta = -0.09$, $SE = 0.09$, $p < .001$) at T2. The results provided evidence for *Hypothesis 2* and *4*: participants who manifested higher initial MINE or greater increase in MINE showed less psychological distress (including depression, anxiety and stress) during the COVID-19 outbreak. Notably, both trait-like (or initial) MINE and state-like (or incremental) MINE had unique benefits during the outbreak.

3.2.3. MINE and distress at T3

The *Hypothesis 3* and *Hypothesis 5* suggested that both MINE at T1 and the increased MINE (i.e., the change) from T1 to T2 would be associated with less distress at T3. To test these, we regressed distress outcomes (depression, anxiety and stress) onto MINE at T1 and increase of MINE from T1 to T2, while controlling level of distress at T2. Consistent with our hypotheses, MINE at the T1 was significantly predictive: MINE at T1 was negatively associated with depression ($B = -0.39$, $\beta = -0.10$, $SE = 0.08$, $p < .001$), anxiety ($B = -0.29$, $\beta = -0.07$, $SE = 0.08$, $p = .001$), and stress ($B = -0.33$, $\beta = -0.07$, $SE = 0.10$, $p = .001$) at T3; moreover, the increase in MINE from T1 to T2 was negatively associated with depression ($B = -0.29$, $\beta = -0.08$, $SE = 0.08$, $p < .001$), anxiety ($B = -0.32$, $\beta = -0.09$, $SE = 0.08$, $p < .001$), and stress ($B = -0.26$, $\beta = -0.06$, $SE = 0.10$, $p = .006$) at T3. The results provided

evidence for *Hypothesis 3* and *5*: participants who manifested higher initial MINE or greater increase in MINE showed less psychological distress (including depression, anxiety and stress) at T3. Again, both trait-like (or initial) MINE and state-like (or incremental) MINE had unique benefits three months after the outbreak.

3.2.4. Mediation role of perceived benefits and costs

Since we only had participants finish the perceived benefits and costs scale at T3, we tested whether perceived benefits and costs would mediate the effects of MINE at T1 and increase of MINE from T1 to T2 on psychological distress at T3 (*Hypothesis 6*). Fig. 2 is a schematic representation of our mediation models. It depicted that a direct effect of trait-like MINE or increased MINE (T2 vs. T1) on distress at T3, and an indirect effect of trait-like MINE or increased MINE (T2 vs. T1) on distress at T3 via perceived benefits and costs at T3.

We presented the results about the mediating effects of perceived benefits and costs in Tables 2 and 3, respectively. Results showed that originally significant effect of trait-like MINE or increased MINE on distress (c) became nonsignificant (or less significant) after controlling for perceived benefits and costs (c'), and the indirect effect was significant as indicated by the 95% confidence interval. These findings indicated that both the effect of trait-like MINE and increased MINE on psychological distress were mediated by perceived benefits and costs. That is, participants who have higher initial MINE or manifested more increase in MINE in response to the COVID-19 outbreak perceived more benefits and less costs of the pandemic and consequently exhibited less distress three months later, providing evidence for *Hypothesis 6*.

Together, we got supportive evidence for all hypotheses.

4. Discussion

The COVID-19 pandemic has produced massive impacts around the world. A large amount of research has emerged. While most research so far has focused on psychological influences of the pandemic with cross-sectional data, we examined how to cope with this pandemic with a large-scale longitudinal study. We focused on a specific coping strategy of MINE, a tendency to derive positive meanings from negative events, and examined how would MINE help people cope with the pandemic outbreak.

All of our proposed hypotheses were supported. The COVID-19 outbreak has heightened the level of MINE. People who exhibited higher initial MINE or more increase in MINE manifested less psychological distress (including depression, anxiety and stress) during and three months after the pandemic. Moreover, perceived benefits and costs mediated the long-term effects. These findings indicated that when confronted with the COVID-19 outbreak, people tend to employ MINE as a coping strategy, drawing more positive meanings from the pandemic, and thereby gain better psychological adjustment.

The present findings contributed to the literature of meaning making in several ways. First, our study supported that negative events such as the COVID-19 pandemic would enhance the tendency of meaning making as suggested by the meaning making model (C.L. Park, 2010). More importantly, these findings were obtained in a real-life disease outbreak situation, thus presenting high ecological validity.

In addition, we provided longitudinal evidence that MINE is beneficial for both immediate and future adjustment, corroborating similar findings as revealed in previous studies (Ai et al., 2005; Nikčević & Nicolaides, 2014; C.L. Park et al., 2008). Moreover, we demonstrated one mechanism underlying the adaptive function of MINE by showing the mediation role of perceived benefits and costs of COVID-19. That is, greater MINE makes people more likely to derive positive rather than negative impacts from COVID-19, thereby reducing psychological distress. Practically, the present research suggested that in coping with threatening situations such as the COVID-19 pandemic, an effective strategy is to reframe the negative situations in a more positive way.

People may feel confused that our participants manifested the lowest

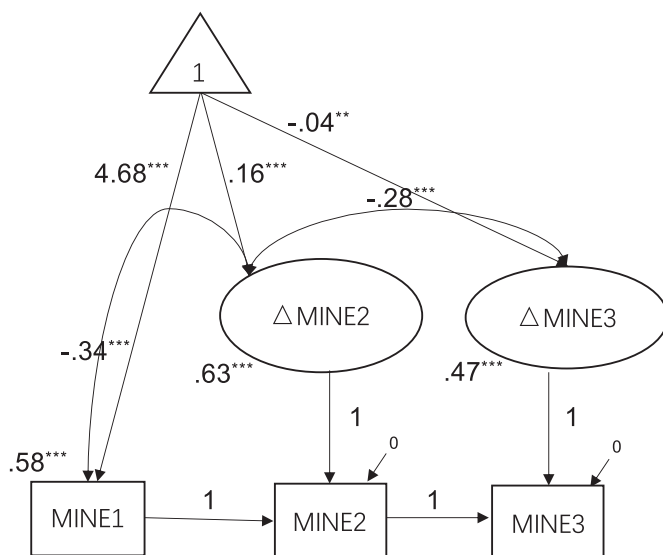


Fig. 1. Illustration of the latent change score model.

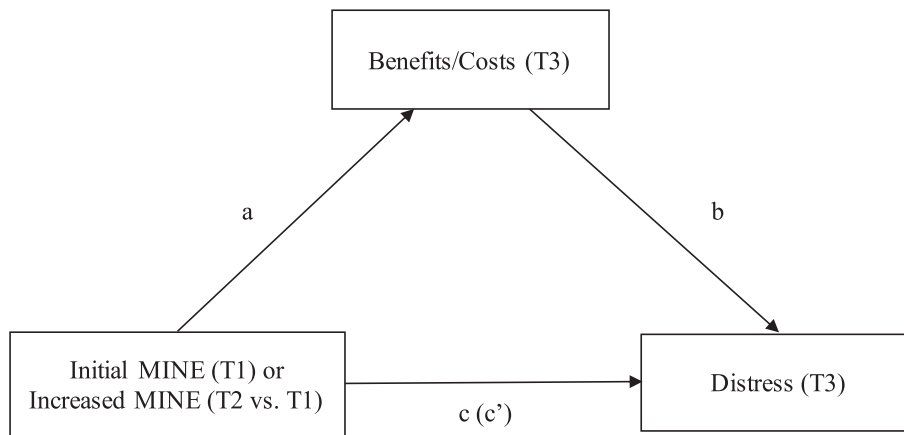


Fig. 2. A schematic representation of mediation models. The model specifies a direct effect of initial MINE or increased MINE on distress (path c) and an indirect effect of initial MINE or increased MINE on distress via perceived benefits and costs (path ab). The indirect effect consists of the effect of initial MINE or increased MINE on perceived benefits/costs (path a) and the effect of perceived benefits/costs on distress (path b). Paths c' denote partial effects when initial MINE or increased MINE and perceived benefits/costs jointly predict distress.

Table 2

Path Coefficients for mediation models with a direct effect of initial MINE (T1) or increased MINE (T2 vs. T1) on DASS and an indirect effect of initial MINE or increased MINE on DASS via perceived benefits.

| | a | b | c | c' | 95% confidence interval | |
|---------------------------|---------|----------|----------|-------|-------------------------|-------|
| | | | | | Lower | Upper |
| Initial MINE→depression | 0.33*** | −0.60*** | −0.39*** | −0.05 | −0.25 | −0.15 |
| Initial MINE→anxiety | 0.33*** | −0.53*** | −0.29** | 0.06 | −0.23 | −0.12 |
| Initial MINE→stress | 0.33*** | −0.58*** | −0.33** | −0.01 | −0.25 | −0.13 |
| Increased MINE→depression | 0.35*** | −0.58*** | −0.29*** | −0.10 | −0.27 | −0.15 |
| Increased MINE→anxiety | 0.35*** | −0.49*** | −0.32*** | −0.15 | −0.23 | −0.12 |
| Increased MINE→stress | 0.35*** | −0.56*** | −0.26** | −0.07 | −0.27 | −0.14 |

Note. a is the unstandardized coefficient for the association between initial MINE or increased MINE and perceived benefits. b is the unstandardized coefficient for the association between perceived benefits and distress outcomes. c is the unstandardized coefficient for the association between initial MINE or increased MINE and distress outcomes. c' is the unstandardized coefficient for the association between initial MINE or increased MINE and distress outcomes, controlling for perceived benefits.

** $p < .01$.

*** $p < .001$.

Table 3

Path Coefficients for mediation models with a direct effect of initial MINE (T1) or increased MINE (T2 vs. T1) on DASS and an indirect effect of initial MINE or increased MINE on DASS via perceived costs.

| | a | b | c | c' | 95% confidence interval | |
|---------------------------|----------|---------|----------|--------|-------------------------|-------|
| | | | | | Lower | Upper |
| Initial MINE→depression | −0.27*** | 0.74*** | −0.39*** | −0.07 | −0.27 | −0.15 |
| Initial MINE→anxiety | −0.27*** | 0.74*** | −0.29** | 0.07 | −0.26 | −0.15 |
| Initial MINE→stress | −0.27*** | 0.86*** | −0.33** | 0.02 | −0.31 | −0.17 |
| Increased MINE→depression | −0.26*** | 0.73*** | −0.29*** | −0.14 | −0.25 | −0.13 |
| Increased MINE→anxiety | −0.26*** | 0.73*** | −0.32*** | −0.17* | −0.25 | −0.13 |
| Increased MINE→stress | −0.26*** | 0.85*** | −0.26** | −0.07 | −0.29 | −0.15 |

Note. a is the unstandardized coefficient for the association between initial MINE or increased MINE and perceived costs. b is the unstandardized coefficient for the association between perceived costs and distress outcomes. c is the unstandardized coefficient for the association between initial MINE or increased MINE and distress outcomes. c' is the unstandardized coefficient for the association between initial MINE or increased MINE and distress outcomes, controlling for perceived costs.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

psychological distress (including depression, anxiety, and stress) during the COVID-19 outbreak, which was inconsistent with previous findings on COVID-19 (e.g., Cao et al., 2020; C. Wang, Pan, et al., 2020). The reason for this unusual finding may be that our sample was purely composed of college students. The outbreak of COVID-19 in China happened during the Spring Festival, the most important holiday in China. While we were performing the second wave investigation, all participants were enjoying the family reunion time with the least school pressure, which might have made them experience the least distress. Nevertheless, both initial MINE and increase in MINE in response to COVID-19 still manifest unique and prospective benefits on

psychological adjustment, indicating that MINE serves as a useful strategy for psychological adjustment.

Some limitations are notable. First, we have conducted our study in China. Dialectical thinking (i.e., negative situations also have positive implications) has been found to characterize Chinese culture (Ji, Nisbett, & Su, 2001; Peng & Nisbett, 1999), suggesting that Chinese are particularly likely to derive positive meanings from negative experiences (Khei, 2019). Future research needs to examine whether our findings hold true in other cultural contexts. Besides, we only considered negative emotions (i.e., depression, anxiety and stress) as the indexes of adjustment. Future research could examine more adjustment indexes

such as well-being and posttraumatic stress symptoms. Finally, past research suggested some factors that may moderate the function of MINE such as the intensity and controllability of threat (C.L. Park, 2010). We have not examined potential roles of these moderators, which also constitutes a limitation and deserves future study.

5. Conclusion

The current study has shown that, in response to a threatening situation such as COVID-19, people increase their tendency of seeing meaning in negative experiences, which provides both contemporaneous and long-term benefits for psychological adjustment. Making meaning in negative experiences can be an adaptive strategy to cope with the ongoing COVID-19 pandemic.

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CRediT authorship contribution statement

Ziyan Yang: Conceptualization, Methodology, Formal analysis, Writing – original draft, Visualization. **Li-Jun Ji:** Conceptualization, Writing – review & editing. **Ying Yang:** Conceptualization, Investigation. **Yuqi Wang:** Methodology, Formal analysis. **Lifang Zhu:** Investigation. **Huajian Cai:** Conceptualization, Project administration, Writing – review & editing, Supervision.

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